



# **Ecology Post-Construction Stormwater Report (EPCSR) Template**

**ACEC Summer Series**

**July 2021**







# What is the **EPCSR**?

## **Ecology Post-Construction Stormwater Report**

- New report between Office of Environmental Services and Office of Design Policy and Support's (ODPS) Water Resources Group
  - Based on existing MS4 stormwater BMP feasibility report, with an Ecology-focus
- Will allow for Section 7 and FWCA coordination under JCP
  - Water quality BMP recommendations from HUC10, IPaC, and GNAHRGIS letter
- Begins coordination for stormwater management and water quality earlier in the design process

# Benefits of EPCSR

## Standardized Water Quality Analysis

- Section 7 and FWCA coordination
- Begins coordination for stormwater management and water quality earlier in the design process
- Reduce the number of changes to BMPs after the Ecology Assessment of Effects Report is transmitted
- Organize coordination between offices and agencies
- Clearly and uniformly document resources and treatment targets
- Create consistent expectations for the analysis process

# What does it look like?

## Attachment A table- What Ecology Sends to Design

Attachment A  
GDOT Post-Construction BMP Summary

Planning Considerations							Location and Identification			Maintenance Responsibility (If the BMP is within GDOT ROW then GDOT will maintain the BMP. If the BMP is on local ROW, coordinate with the locals.)
Water Resource (Filled Out By Ecologist)	Purpose for Analysis of Water Resource	Impairment (if applicable)	Outfall Label (Drainage Basin Label)	Evaluated BMP(s)	Evaluation of Practicability	Practicable Selected BMP(s) (if applicable)	Station (Begin - End)	Offset (Left/ Right)	Plan Sheet	
PS 2	Protected Species									
PS 4	FWCA									



Ecologist to fill out these two columns post-A3M with Ecology resources of concern

# What does it look like?

## Attachment A table- What Design Sends to Ecology

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PS 2	Protected species	N/A	OC	Filter strip, grass channel, bioslope, enhanced dry swale	Criteria No. 6	N/A	N/A	N/A	N/A	GDOT
PS 4	FWCA	N/A	OD	Bioslope	Practicable	Bioslope	1505+88.42-1512+83.93; 1503+41.18-1506+15.58; 1708+59.00-1714+82.52; 1709+04.37-1712+48.00	LEFT; RIGHT; LEFT; RIGHT	18-0006,18-0007,18-0008,18-0009	GDOT

Design’s analysis for Ecology resources

# What does it look like?

## Attachment A table- What Design Sends to Ecology

Attachment A  
GDOT Post-Construction BMP Summary

Planning Considerations							Location and Identification			Maintenance Responsibility (If the BMP is within GDOT ROW then GDOT will maintain the BMP. If the BMP is on local ROW, coordinate with the locals.)
Water Resource (Filled Out By Ecologist)	Purpose for Analysis of Water Resource	Impairment (if applicable)	Outfall Label (Drainage Basin Label)	Evaluated BMP(s)	Evaluation of Practicability	Practicable Selected BMP(s) (if applicable)	Station (Begin - End)	Offset (Left/ Right)	Plan Sheet	
PS 2	Protected species	N/A	OC	Filter strip, grass channel, bioslope, enhanced dry swale	Criteria No. 6	N/A	N/A	N/A	N/A	GDOT
PS 4	FWCA	N/A	OD	Bioslope	Practicable	Bioslope	1505+88.42-1512+83.93; 1503+41.18-1506+15.58; 1708+59.00-1714+82.52; 1709+04.37-1712+48.00	LEFT; RIGHT; LEFT; RIGHT	18-0006,18-0007,18-0008,18-0009	GDOT

Ecology's focus for AOE

## EPCSR Design-Bid-Build Project Timeline

### At the End of A3M

- Ecologist completes Early Coordination to determine treatment targets with agencies
- Ecologist and ODPS coordinate with the District Construction and Maintenance for input
- Ecologist fills out the first two columns of Attachment A and delivers them to the designer.



### Technical Studies

- Designer submits Draft EPCSR to [EnvBMP@dot.ga.gov](mailto:EnvBMP@dot.ga.gov) at least **22 weeks before PFPR**
- ODPS reviews (usually 2 weeks)
- Designer revises and resubmits EPCSR, addressing all comments
- ODPS reviews and (if all comments are addressed) **accepts EPCSR 18 weeks before PFPR**



### PFPR, FFPR, Final Plans

- ODPS reviews plans related to BMPs
- ODPS Revises EPCSR, if needed



## EPCSR Design-Build Project Timeline

### Pre-Let

#### At the End of A3M

- Ecologist completes Early Coordination with agencies
- Ecologist and ODPS coordinate with the District Construction and Maintenance for input
- Ecologist fills out the first two columns of Attachment A and delivers them to the designer.



#### Technical Studies

- Pre-let GEC submits Draft EPCSR to [EnvBMP@dot.ga.gov](mailto:EnvBMP@dot.ga.gov) **allowing time for comments and resubmittal**
- ODPS reviews (usually 2 weeks)
- Pre-let GEC revises and resubmits, addressing all comments within 1-2 weeks
- ODPS reviews and (if all comments are addressed) **accepts EPCSR**



#### 60% Costing Plans

- ODPS reviews plans related to BMPs



Include EPCSR in Ecology AOER

## EPCSR Design-Build Timeline

### Post-Let

#### Developer/ Design-Builder Receives NTP 2

- Post-Let Developer/Design-Builder reviews EPCSR and revises as needed
- At a minimum, the post-let Developer/Design-Builder will need to update the EPCSR to make it their own



#### Review / Resubmittal

- Post-let Developer/Design-Builder submits Draft EPCSR to [EnvBMP@dot.ga.gov](mailto:EnvBMP@dot.ga.gov) **allowing time for comments and resubmittal**
- ODPS and Post-let GEC review (usually 2 weeks)
- Post-let Developer/Design-Builder revises and resubmits, addressing all comments within 1-2 weeks
- ODPS and Post-let GEC review and (if all comments are addressed) **accept EPCSR**



#### NEPA Processing

- Final EPCSR and Lockdown Plans dispersed to NEPA for Re-Evaluation and Ecology AOER addenda prior to NTP 3



#### Plan Submittals

- ODPS reviews plans related to BMPs



# Roll Out Process

## For both Design-Bid-Build and Design-Build Projects

- If concept **has not been** approved by the date the EPCSR template is published:
  - The EPCSR **is required** if project ecologists have determined water quality analysis is needed.
- If concept **has been** approved by the date the EPCSR template is published:
  - The EPCSR **is not required**, but may be used as a point of reference.

**Questions?**



# Acronyms

- BMP = Best Management Practices
- EPCSR = Ecology Post-Construction Stormwater Report
- FWCA = Fish and Wildlife Coordination Act
- GEC = General Engineering Consultant
- GNAHRGIS = Georgia's Natural, Archaeological, and Historic Resources GIS
- IPaC = Information for Planning and Consultation
- JCP = Joint Coordination Procedures
- MS4 = Municipal Separate Storm Sewer System
- OPDS = Office of Design Policy and Support



# Georgia Department of Transportation

## Ecology Post-Construction Stormwater Reports



# Today's Discussion

1. Purpose of  
Template

2. Which Template  
to Use

3. Applicability /  
Roll Out

4. Submittal  
Schedule

5. General  
Stormwater  
Concepts

6. Differences From  
MS4

7. How to Prepare  
an ECPSR

8. How to Prepare  
Plans

9. SP 169 and Pay  
Items

10. Contacts

11. Other Training

12. Questions

## Purpose of EPCSR Template

- Encourage early assessment of appropriateness and practicability of BMPs
- Reduce the number of changes to BMPs after the Assessment of Effects is written
- Organize coordination
- Clearly document treatment targets
- Create consistent expectations for the analysis process
- Methodically document project-specific and species-specific considerations



## Purpose of Post-Construction BMPs

- Post-construction BMPs are proposed for several different reasons. Sometimes a single post-construction BMP has multiple purposes:

MS4 compliance

Detention

Ecology purposes (determined by project ecologist and agency)

Protected species

Removing seasonal restrictions

## Definitions / Acronyms

# PCSR = Post-Construction Stormwater Report

A document containing analysis of runoff

### MS4 PCSR

Municipal Separate Storm Sewer  
System PCSR

- Prepared only inside GDOT's MS4 areas for MS4 permit compliance
- **PLE** = Project Level Exclusion
  - No MS4 PCSR is needed although project is in MS4 areas

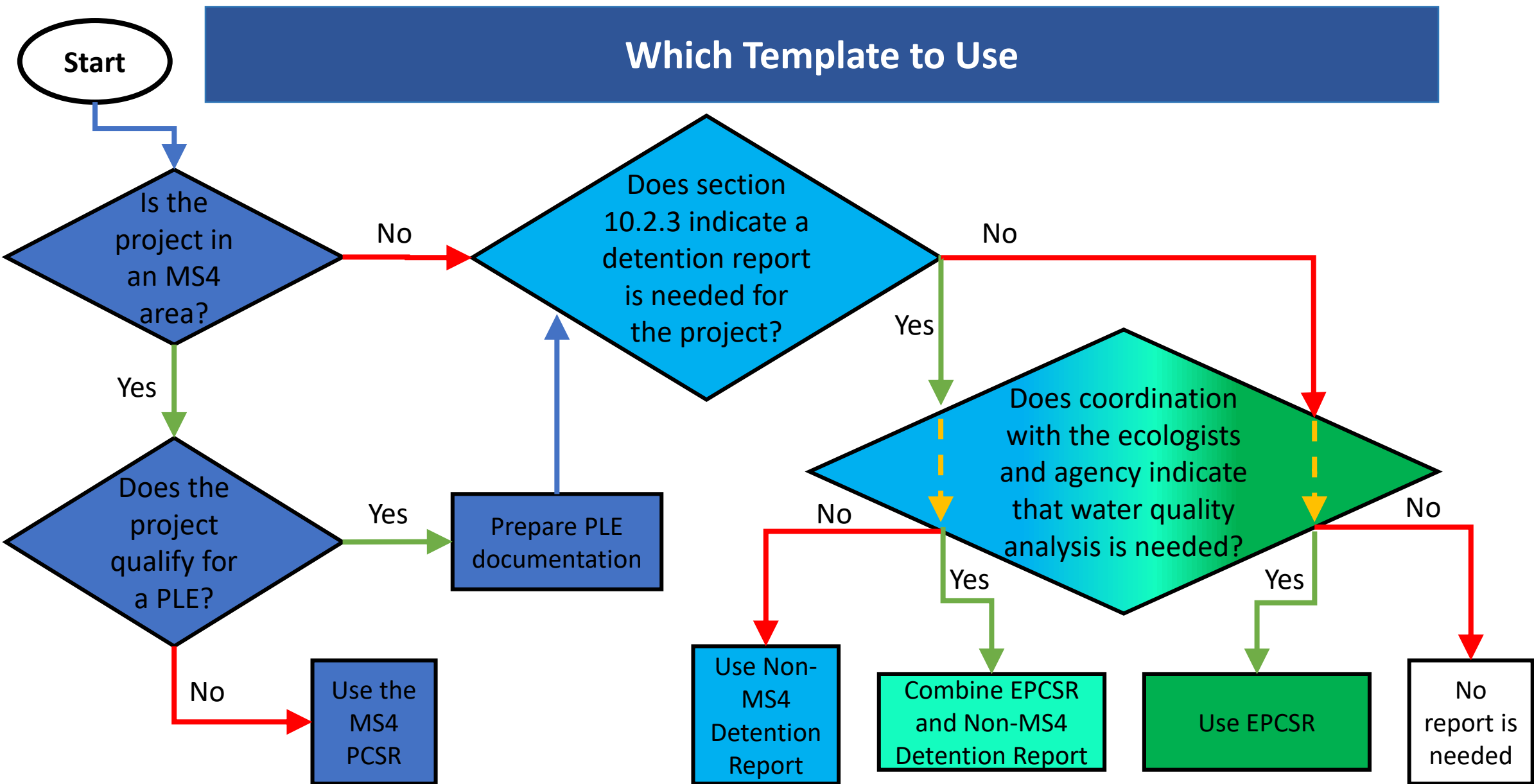
### EPCSR

Ecology Post Construction  
Stormwater Report

- Prepared when agency coordination with ecologists indicates that water quality treatment needs to be assessed

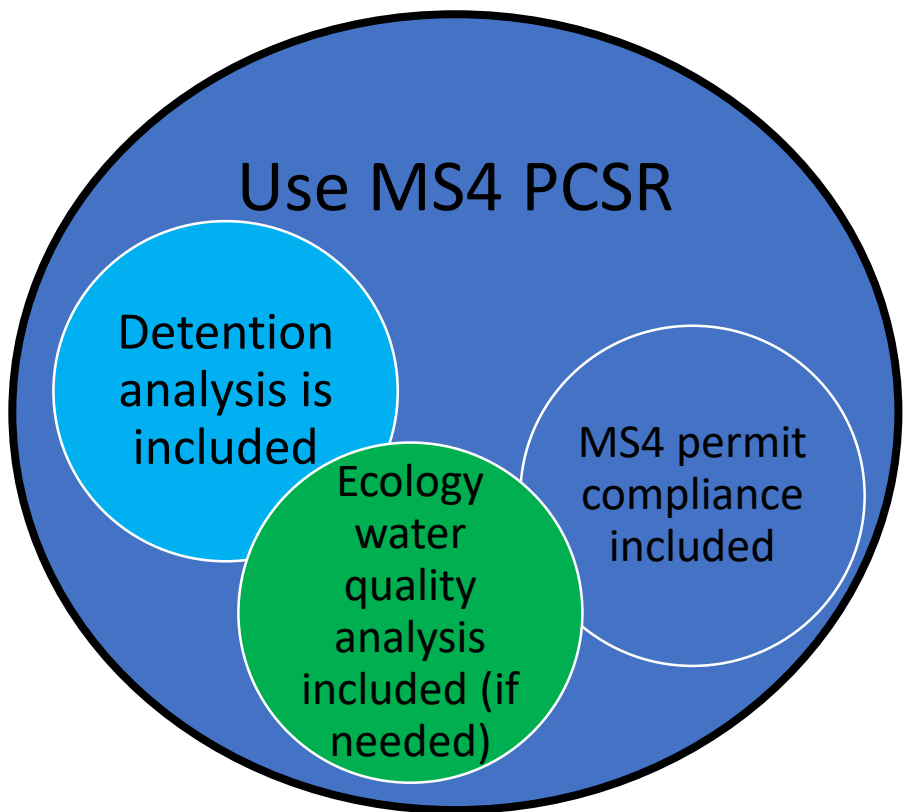
### Non-MS4 Detention Report

- Prepared outside of GDOT's MS4 areas to comply with Drainage Manual section 10.2.3
- **Detention** = holding water in a BMP and releasing it slowly to prevent flooding or erosion



## Which Template to Use

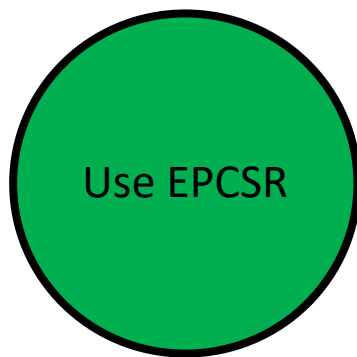
**Inside** MS4 areas & **no** PLE:



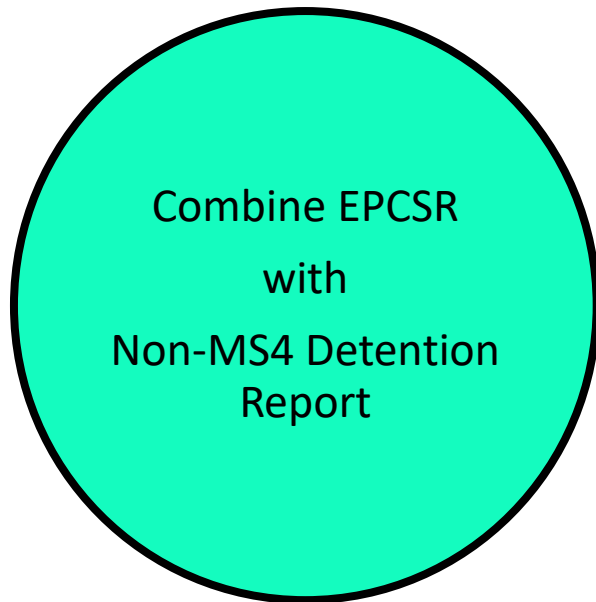
**Outside** MS4 areas  
or **inside** MS4  
areas with a **PLE**, if  
Section 10.2.3  
indicates that a  
detention report is  
needed:



**Outside** MS4 areas  
or **inside** MS4 areas  
with a **PLE**, if  
ecologist and agency  
coordination  
indicates water  
quality analysis is  
needed:



**Outside** MS4 areas or **PLE**:  
if ecology and detention  
analysis is needed:





## Applicability / Roll Out

- If concept **has not** been approved by 7/15/2021:  
The Template will be used if project ecologists have determined water quality analysis is needed
- If concept **has** been approved by 7/15/2021:  
The Template may be used as a point of reference but it's use is **not required**
- <http://www.dot.ga.gov/PS/DesignManuals>

### POLICY ANNOUNCEMENTS

Notification of Ecology Post-Construction Stormwater Report Template and Help  
File

# Applicability / Roll Out

- <http://www.dot.ga.gov/PS/DesignManuals>

POLICY ANNOUNCEMENTS

Notification of Ecology Post-Construction Stormwater Report Template and Help File

- <http://www.dot.ga.gov/PS/DesignManuals/DesignGuides>

## Roadway

	Title
>	Category : Construction Stormwater (Erosion Control)
▼	Category : Design & Environmental Coordination Guidance
	Ecology Post Construction Stormwater Report Template

## Traditional Delivery: Submittal Schedule

### At the End of A3M

- Ecologist completes technical assistance to determine treatment targets with agencies
- Ecologist and ODPS coordinate with the District Construction and Maintenance for input
- Ecologist fills out the first two columns of Attachment A and delivers them to the designer.



### Technical Studies

- Designer submits Draft EPCSR to [EnvBMP@dot.ga.gov](mailto:EnvBMP@dot.ga.gov) at least **22 weeks before PFPR**
- ODPS reviews (usually 2 weeks)
- Designer revises and resubmits EPCSR, addressing all comments
- ODPS reviews and (if all comments are addressed) **accepts EPCSR 18 weeks before PFPR**



### PFPR, FFPR, Final Plans

- ODPS reviews plans related to BMPs

## Innovative Delivery: Submittal Schedule

### Pre-Let

#### At the End of A3M

- Ecologist completes technical assistance to determine treatment targets with agencies
- Ecologist and ODPS coordinate with the District Construction and Maintenance for input
- Ecologist fills out the first two columns of Attachment A and delivers them to the designer.



#### Technical Studies

- Pre-let GEC submits Draft EPCSR to [EnvBMP@dot.ga.gov](mailto:EnvBMP@dot.ga.gov) **allowing time for comments and resubmittal**
- ODPS reviews (usually 2 weeks)
- Pre-let GEC revises and resubmits, addressing all comments within 1-2 weeks
- ODPS reviews and (if all comments are addressed) **accepts EPCSR**



#### 60% Costing Plans

- ODPS reviews plans related to BMPs



Include EPCSR in Ecology AOER



## Innovative Delivery: Submittal Schedule

### Post-Let

#### Developer/ Design-Builder Receives NTP

2

- Post-Let Developer/Design-Builder reviews EPCSR and revises as needed
- At a minimum, the post-let Developer/Design-Builder will need to update the EPCSR to make it their own



#### Review / Resubmittal

- Post-let Developer/Design-Builder submits Draft EPCSR to [EnvBMP@dot.ga.gov](mailto:EnvBMP@dot.ga.gov) **allowing time for comments and resubmittal**
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#### NEPA Processing

- Final EPCSR and Lockdown Plans dispersed to GDOT Environmental for Re-Evaluation and Ecology AOER addenda prior to NTP 3



#### Plan Submittals

- ODPS reviews plans related to BMPs

## Definitions

- **Post-Construction BMP** = permanent BMP

In this presentation and in the EPCSR template, “BMP” refers to a post-construction BMP

Examples include: filter strips, grass channels, wet detention basins, etc.

The EPCSR template is for post-construction BMP analysis, not erosion control analysis.

Sediment basins are not permanent BMPs. Sediment basins are used during construction while post-construction BMPs remain after construction is complete. However, sediment basins can be converted into post-construction BMPs such as dry detention basins, etc.

## BMP Menu

- Here are post-construction BMPs which GDOT builds:
  - Filter strip
  - Grass channel
  - Bioslope
  - Enhanced dry swale
  - Bioretention basin
  - Enhanced wet swale
  - Infiltration trench
  - Sand Filter
  - Dry detention basin
  - Wet detention pond
  - Stormwater wetland (level 1 or 2)
  - OGFC
- See the Drainage Manual BMP Menu table to find which BMPs can be sized for each sizing criteria.

Unified sizing criteria:  $RR_v$ ,  $WQ_v$ ,  $CP_v$ ,  $Q_{25}$ ,  $Q_{100}$

## Water Quality Volume vs. Runoff Reduction Volume

- **Water quality volume =  $WQ_v$**  = the volume resulting from 1.2 inches of rainfall based on either the net new or total impervious area.
- Different BMPs provide different treatment percentages for the  $WQ_v$

Here are ways BMPs treat the  $WQ_v$ :

**Filtration**- process by which solid particles are removed from water by a filter medium such as grass or engineered soil mix

**Settling**- solid particles fall out of suspension in water when velocity is low

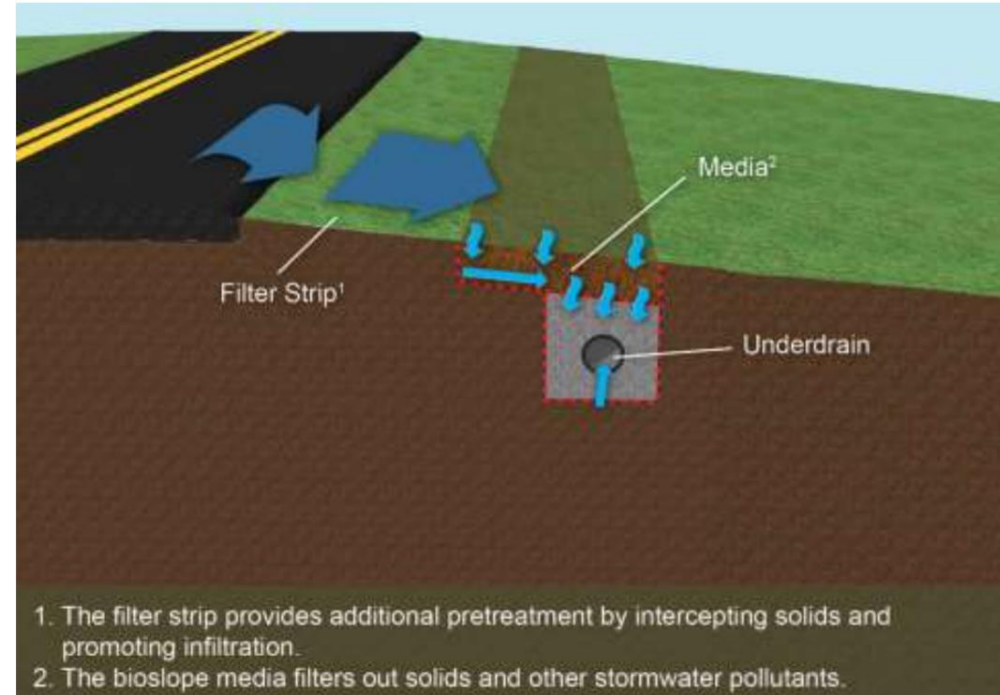
**Infiltration**- water (with particles) enters the soil instead of leaving the project

## Water Quality Volume vs. Runoff Reduction Volume

- $WQ_v$  treatment example:

A bioslope can be sized to treat the  $WQ_v$ .

A bioslope primarily uses filtration and infiltration to treat the  $WQ_v$ .



## Water Quality Volume vs. Runoff Reduction Volume

- **Runoff reduction volume =  $RR_v$**  = the volume resulting from 1.0 inch of rainfall based on either the net new or total impervious area.

There are some BMPs that can infiltrate the  $RR_v$

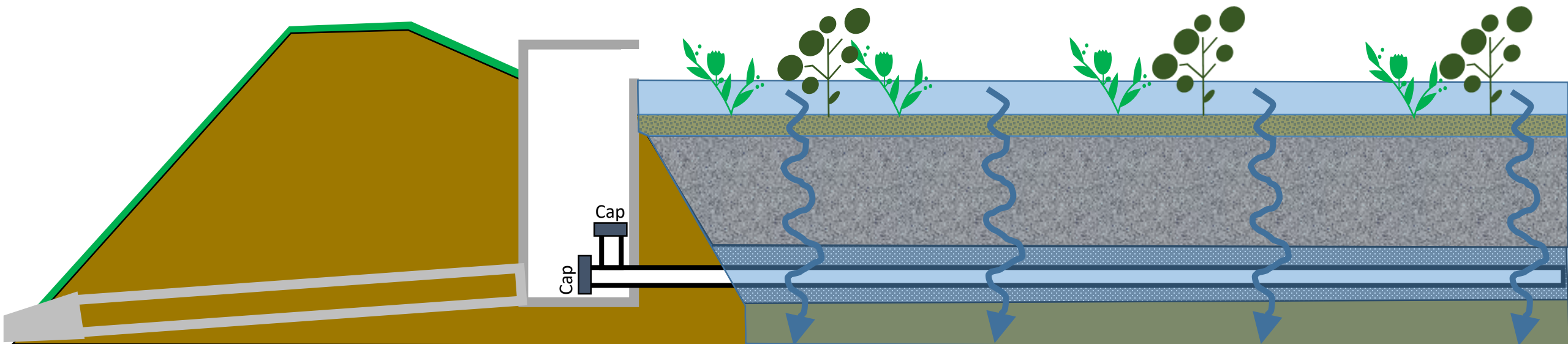
Different BMPs provide different infiltration percentages for the  $RR_v$

## Water Quality Volume vs. Runoff Reduction Volume

- $RR_v$  infiltration example:

A bioretention basin with a capped underdrain can provide 100% infiltration of the  $RR_v$

Infiltration testing is done during construction. However, if infiltration is found not to be possible during construction the bioretention basin cap can be removed to treat the  $WQ_v$  instead





## Channel Protection Volume, $Q_{25}$ , $Q_{100}$

- **Channel Protection Volume =  $CP_v$**  = the volume resulting from the 1 year 24 hour storm runoff using the TR-55 method

There are some BMPs that can provide extended detention for the  $CP_v$

- **$Q_{25}$  = 25 year peak flow = overbank flood protection**

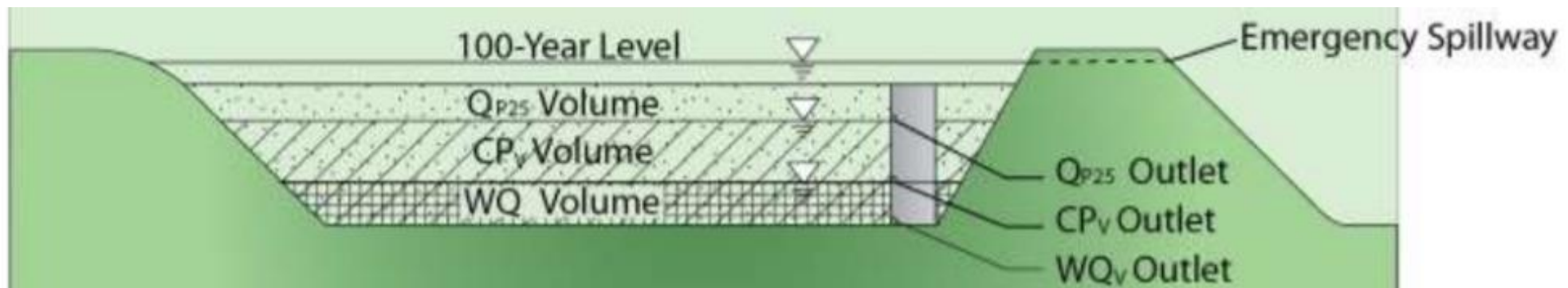
There are some BMPs that can detain increases to the 25 year peak flow. See section 10.2.3 of the GDOT Drainage Manual to determine if detention is warranted and suitable.

- **$Q_{100}$  = 100 year peak flow = extreme flood protection**

There are some BMPs that can detain increases to the 100 year peak flow. See section 10.2.3 of the GDOT Drainage Manual to determine if detention is warranted and suitable.

## How Do Sizing Criteria Work Together?

- A single BMP can infiltrate the  $RR_v$  or treat the  $WQ_v$ .
- If a BMP infiltrates the  $RR_v$ , treatment of the  $WQ_v$  is not needed.
- Depending on the BMP, the  $CP_v$  can be detained and the  $RR_v$  can be infiltrated in the same BMP. In this case, volumes will be nested.
- Depending on the BMP, the  $CP_v$ ,  $Q_{25}$ , and  $Q_{100}$  can be detained and the  $WQ_v$  can be treated in the same BMP. In this case, volumes will be nested.



## What Are Warranting Criteria?

- **Warranting Criteria** = scenarios for which proposing detention is likely justifiable. These criteria are in [section 10.2.3](#) of the Drainage Manual

## What are Infeasibilities and Outfall Level Exclusions?

- **Feasibility** = the ability to implement a BMP which is effective, appropriate, and constructable for [MS4](#) purposes.
- **Outfall Level Exclusion** = a BMP is not needed at the outfall for [MS4](#) purposes.
- **Suitability** = the ability to implement a BMP which is effective, appropriate, and constructable for [section 10.2.3 detention](#) purposes.

## What is Practicability?

- **Practicability** = the ability to implement a BMP which is effective, appropriate, and constructable for **ecology** purposes. See the template for practicability criteria.

Practicability analysis in EPCSRs is similar to Outfall Level Exclusion and feasibility analysis in MS4 PCSRs. However, there are some differences in the criteria.

EPCSR practicability criteria include room for adjustment based on project-specific or species-specific needs, while MS4 feasibility criteria do not have this flexibility

## What is Practicability?

- EPCSR criteria\*\* for when building a BMP might **not** be practicable:
  1. BMP would cause a change in alignment with safety concern
  2. BMP would be in-line with the stream or would place fill in a stream
  3. BMP would be the only impact to a stream buffer or wetland
  4. Sheet flow\*
  5. Flows are from outside of project ROW or are from undisturbed areas
  6. BMP would cause loss of habitat for or adversely affect protected species\*
  7. BMP would cause significant damage to a cultural or community resource\*
  8. BMP would be the only cause of a displacement of a residence or business
  9. Site limitations (bedrock, contaminated soils, utilities, etc)\*
  10. Infiltration capacity is insufficient (only applies to infiltration BMPs)
  11. Lack of gravity flow

\*Project-specific agreement may supersede this criterion

\*\* See template for exact wording of the criteria. This slide contains summaries rather than exact wording. Also consider laws and regulations although these are not practicability criteria

## What is Practicability?

- What are MS4 Outfall Level Exclusions and infeasibility criteria\* that are **not** practicability criteria?

Cost (Infeasibility #1)

Minimal net new impervious area is not a practicability criteria, but ecology post-construction stormwater criteria do not apply for drainage areas with minimal net new impervious area (OLE #6)

90 day or greater delay (Infeasibility #2)

Site is too small to infiltrate a significant volume (Infeasibility #9)

\*See template for exact wording of the criteria. This slide contains summaries rather than exact wording



## Why Look at Practicability?

- Although post-construction BMPs can provide benefits to the aquatic environment, it is important to check if the BMPs would have any unintended negative impacts.
- It is also important to check that the BMP will function as intended.



## Partial Credit

- One major difference between EPCSRs and MS4 PCSRs is that for EPCSRs partial credit needs to be considered.

That means that if a BMP doesn't provide the target treatment percentage, it should still be counted in the report as providing some treatment. The amount of treatment it provides needs to be recorded.

Also, if an incidental BMP is not large enough to meet the full sizing criteria, take credit for the water it does treat / infiltrate / detain.

✓  
63%

✓  
82%

✓  
79%

✓  
58%

## Focus on What We Can Accomplish

It is especially important to demonstrate a “good-faith effort” to meet the treatment targets to the extent practicable.

The tone of EPCSRs should be relatively positive.

Don't use practicability criteria to exclude a BMP unless the BMP is genuinely not practicable.

**Level of Effort** (approximate)

Most  
Effort

Occasionally this much effort

Typical Range  
of Effort

Occasionally this much effort

Typical Range  
of Effort

Typical Range  
of Effort

Least  
Effort

**MS4 PCSRs**

Least range in effort, most effort  
overall

**Non-MS4 Detention Reports**

Most range in effort because reports  
are larger if ponds are proposed

**EPCSRs**

Moderate range in effort, moderate  
effort overall

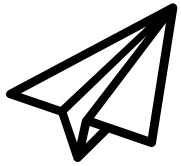
## EPCSR Contents

- Cover Page
- Summary Table (Attachment A)
- BMP Evaluation (Attachment B)
- Appendices:
  - Drainage Basin Maps
  - Soil Maps
  - Stormwater Runoff Quality Calculations
  - Practicability Documentation
  - BMP Design Calculations
  - Agency Coordination for Treatment Targets
  - Cost Calculations

## Steps for Preparing EPCSR

1. Designer or ecologist adds coordination documentation to Appendix F
2. Ecologist fills out the first two columns of Attachment A and sends to designer
3. Designer prepares Appendices A, B, C
4. Designer accounts for incidental treatment
5. If needed, designer finds locations for BMPs which are not incidental.  
Designer analyzes those for practicability
6. Designer prepares Attachment B, and Appendices D, E, G
7. Designer puts any structural BMPs in plans
8. Designer submits EPCSR with link to plans to [envbmp@dot.ga.gov](mailto:envbmp@dot.ga.gov)

## 1. Appendix F (By Designer or Ecologist)



- The below information should be recorded at the end of A3M during technical assistance. The information should be sent to the agency in an email.

Area of Potential Effect

Pollutants of concern

Protected species

Sizing criteria

Percent removal targets (for each sizing criteria)

Treatment of net new impervious area or treatment of total impervious area



- Receive written or email concurrence on the agreed upon initial treatment parameters.



- Print emails to pdf and add to Appendix F

## 2. First Two Columns of Attachment A (Ecologist to Designer)

- The based on the coordination at the end of A3M, the ecologist will determine which water resources need to be in column 1. Add rows if needed.
- The ecologist will record the purpose for analysis of the water resource in column 2.

Examples might include:

Protected species

Removing seasonal restrictions

**Attachment A**  
**GDOT Post-Construction BMP Summary**

Water Resource (Filled Out By Ecologist)	Purpose for Analysis of Water Resource	
<b>1</b>	<b>2</b>	



### 3. Appendices A, B, C (By Designer)

- Appendix A – Drainage Basin Maps Preparation Process

1. Load relevant dgns
2. Locate water resources from Attachment A
3. Identify outfalls which drain to those water resources

**Outfall** = location where stormwater discharge leaves the ROW or just before the discharge enters a state water. Select the location which occurs higher in the discharge flow path.


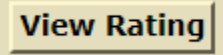
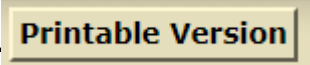
4. Delineate pre-development and post-development drainage areas.

Check how existing and proposed pipes, culverts, grading, and ditches influence the delineations

5. Print to pdf and add to Appendix A

There is general guidance for drainage area map display in the MS4 PCSR Help file pages 16-19.

### 3. Appendices A, B, C (By Designer)

- Appendix B – Soils Map
  1. Go to the Web Soil Survey  
<https://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm>
  2. In the Area of Interest (AOI) tab click the AOI button to draw a shape covering the area of the project 
  3. In the Soil Data Explorer tab go to the Soil Properties and Qualities tab  
 Select Soil Qualities and Features, then select Hydrologic Soil Group, then click the View Rating button  
 Click the Printab  button
  4. Save the pdf and add to Appendix B 

### 3. Appendices A, B, C (By Designer)

- Appendix C – Stormwater Runoff Quality Calculations
  1. Check if the agreed upon initial treatment parameters include treatment of the net new impervious area or the total impervious area
  2. For each drainage area delineated, calculate the sizing volumes agreed upon  
Include the formulas used, the value of each variable, and resultant sizing volumes in Appendix C



## 4. Account for Incidental Treatment (By Designer)

- Look for BMPs which will already be on the project such as OGFC, grass channels, and filter strips
- Record incidental BMPs in Attachments A and B
- Calculate how much treatment is provided by these BMPs.

If a BMP provides treatment of area smaller than the goal, divide the area for which treatment is provided by the goal, and multiply by the TSS removal or RRv infiltration to calculate treatment provided.

- Add calculations to Appendix E



## 5. Non-Incidental BMPs (By Designer)

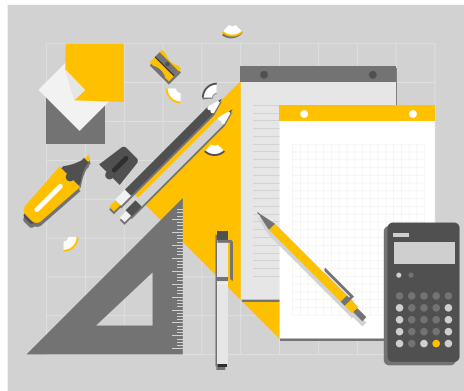
- If the treatment parameters cannot be fully met with incidental BMPs, look for the best location where a non-incidental BMP could be proposed in each drainage area delineated, if necessary.
- Analyze non-incidental BMPs for practicability at the best location in each drainage area.
- Start with the BMPs that are most appropriate for the drainage area, that best address the treatment parameters, and that have the lowest maintenance ratings.
- Record the analysis in Attachment B and add the results to Attachment A.

## 6. Attachment B, Appendices D, E, G (By Designer)

- Check Attachment B - Ecology Post-Construction Stormwater BMP Evaluation and Supporting Documentation to be sure there is analysis for each drainage area which goes to the water resources identified by the ecologist
- For each BMP which is practicable add the sizing calculations to Appendix E.
- For each drainage area that does not have a practicable BMP, document the impracticability in Appendix D.
- Fill out Appendix G – Cost Calculations for each practicable BMP which is non-incidental.

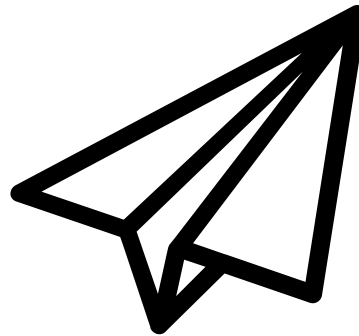
## 7. Add Any Structural BMPs to Plans

- At this point in the EPCSR preparation process any structural BMPs should be added to the plans.
- More information later in presentation.



## 8. Submit to Envbmp@dot.ga.gov (By Designer)

- Submit the EPCSR with a link to plans to [envbmp@dot.ga.gov](mailto:envbmp@dot.ga.gov)





## MS4 Criteria, Practicability Criteria, Suitability Criteria

- What should you do if a project needs MS4 analysis, ecology stormwater analysis, and detention analysis?
- If there is a purpose for analysis (MS4, detention, or ecology) that applies to the outfall which does not have an exclusion criteria, build a BMP.
- For guidance you can use the Venn Diagrams in this presentation.



## MS4 Criteria, Practicability Criteria, Suitability Criteria

Short Description*	MS4	Practicability	Suitability
Roadway Alignment Change	OLE 1	1	1
Re-aligning / Piping Stream	OLE 2	2	2
Stream Buffer or Wetland Impacts	OLE 3	3	-
Sheet Flow	OLE 4	4*	-
Offsite or Undisturbed Areas	OLE 5	5	-
Minimal Net New Impervious	OLE 6	Considered but not a practicability criteria.	-
Cost	Infeasibility 1	Recorded but not a practicability criteria.	Considered but not a suitability criteria.
90+ Day Delay	Infeasibility 2	-	-
Loss of Habitat for Protected Species	Infeasibility 3	6*	3
Damage Cultural or Community Resource	Infeasibility 4	7*	4
Displace Residence or Business	Infeasibility 5	8	-
State or Federal Law or Regulation	Infeasibility 6	Considered but not a practicability criteria.	5
Site Limitations	Infeasibility 7	9*	6
Limited Infiltration Capacity	Infeasibility 8	10	-
Limited Size for Infiltration	Infeasibility 9	-	-
No Gravity Flow	Infeasibility 10	11	7

See the Drainage Manual for full wording of infeasibilities, outfall level exclusions, and suitability criteria. See the EPCSR Template for full wording of practicability criteria.

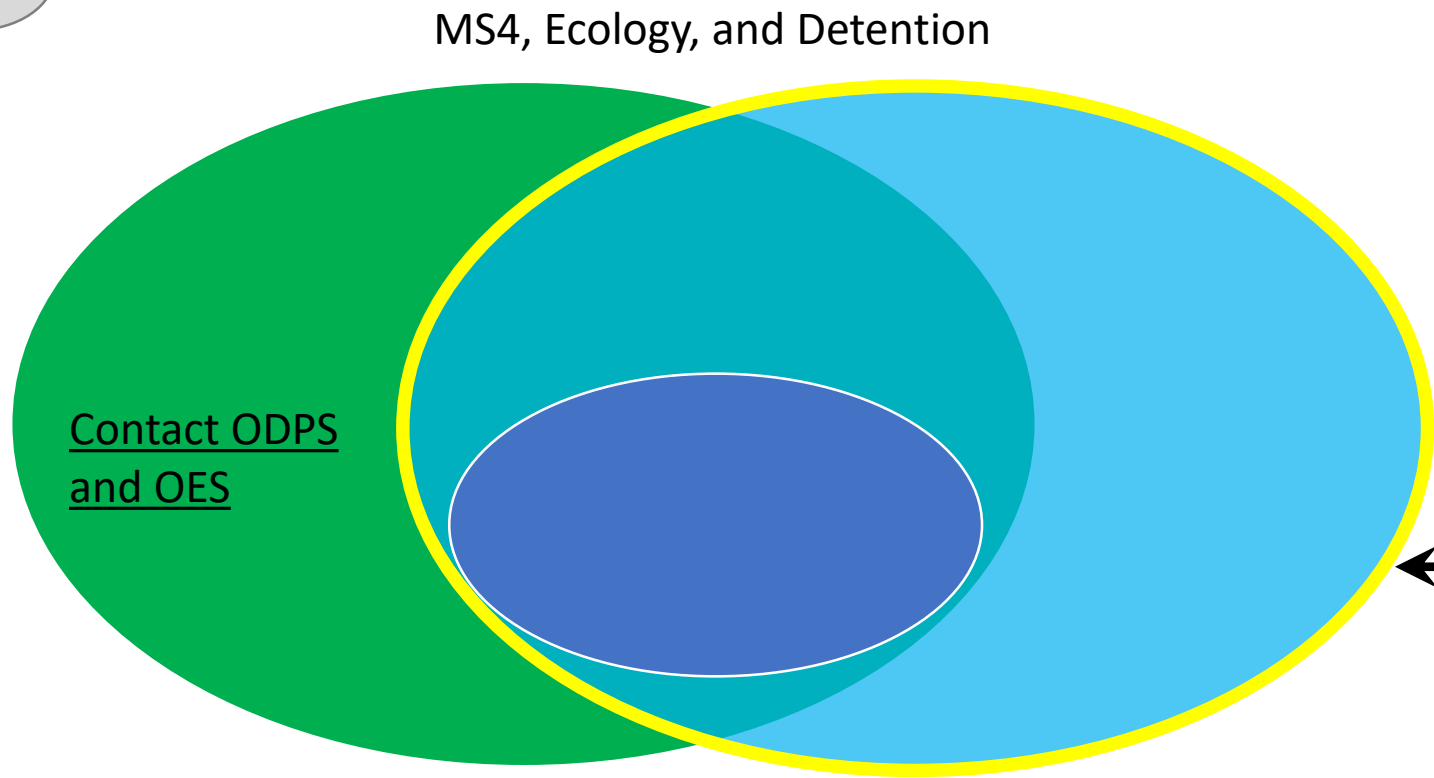
\*Project specific agreement may overturn this criterion.

## MS4 Criteria, Practicability Criteria, Suitability Criteria

- Suitability criteria and practicability criteria were derived from MS4 criteria.
- All suitability criteria and all practicability criteria are also feasibility criteria or outfall level exclusions. However, some of the exact wording differs.

# How to Determine if the BMP Will Be Built

Where does the BMP fall on the diagram?



**Legend**

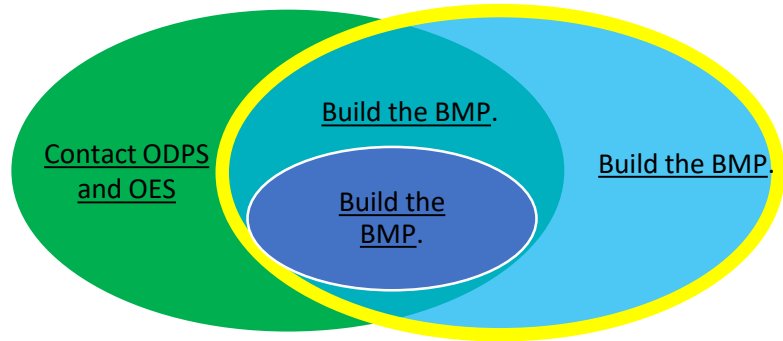
- Every BMP in Here is Feasible & Has No OLE
- Every BMP in Here is Practicable
- Every BMP in Here is Suitable

Build the BMP if it falls within the yellow circle.

## How to Determine if the BMP Will Be Built

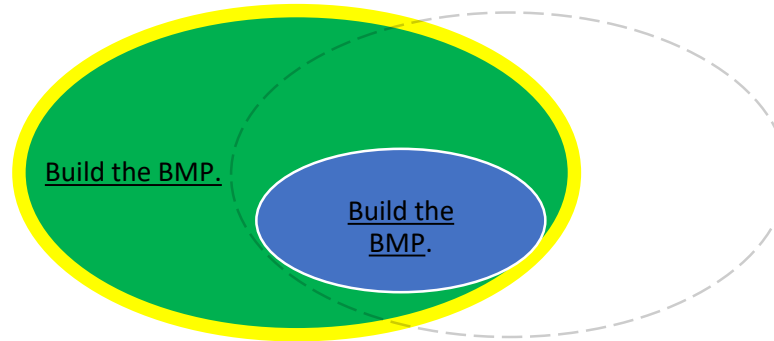
### Table of Contents

#### MS4, Ecology, and Detention Slides 46-51



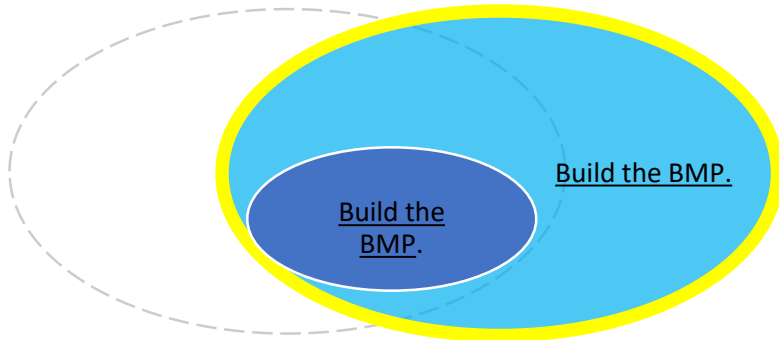
If the BMP is not suitable and impracticable: contact ODPS.

#### MS4 and Ecology Slides 56-59



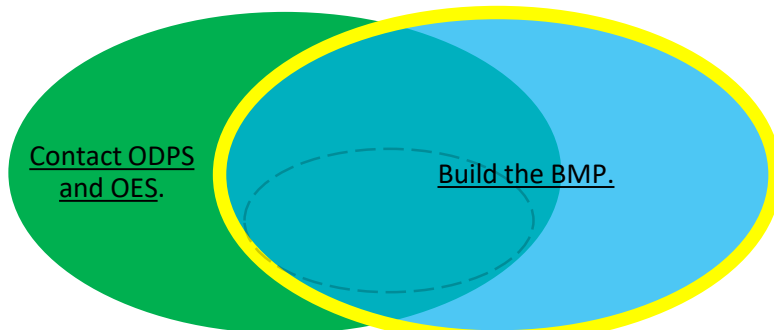
If the BMP is impracticable, do not build the BMP.

#### MS4 and Detention Slides 52-55



If the BMP is not suitable: contact ODPS.

#### Ecology and Detention Slide 60-64



If the BMP is not suitable and impracticable, contact ODPS.

#### Legend

Every BMP in Here is  
Feasible & Has No OLE

Every BMP in Here is  
Practicable

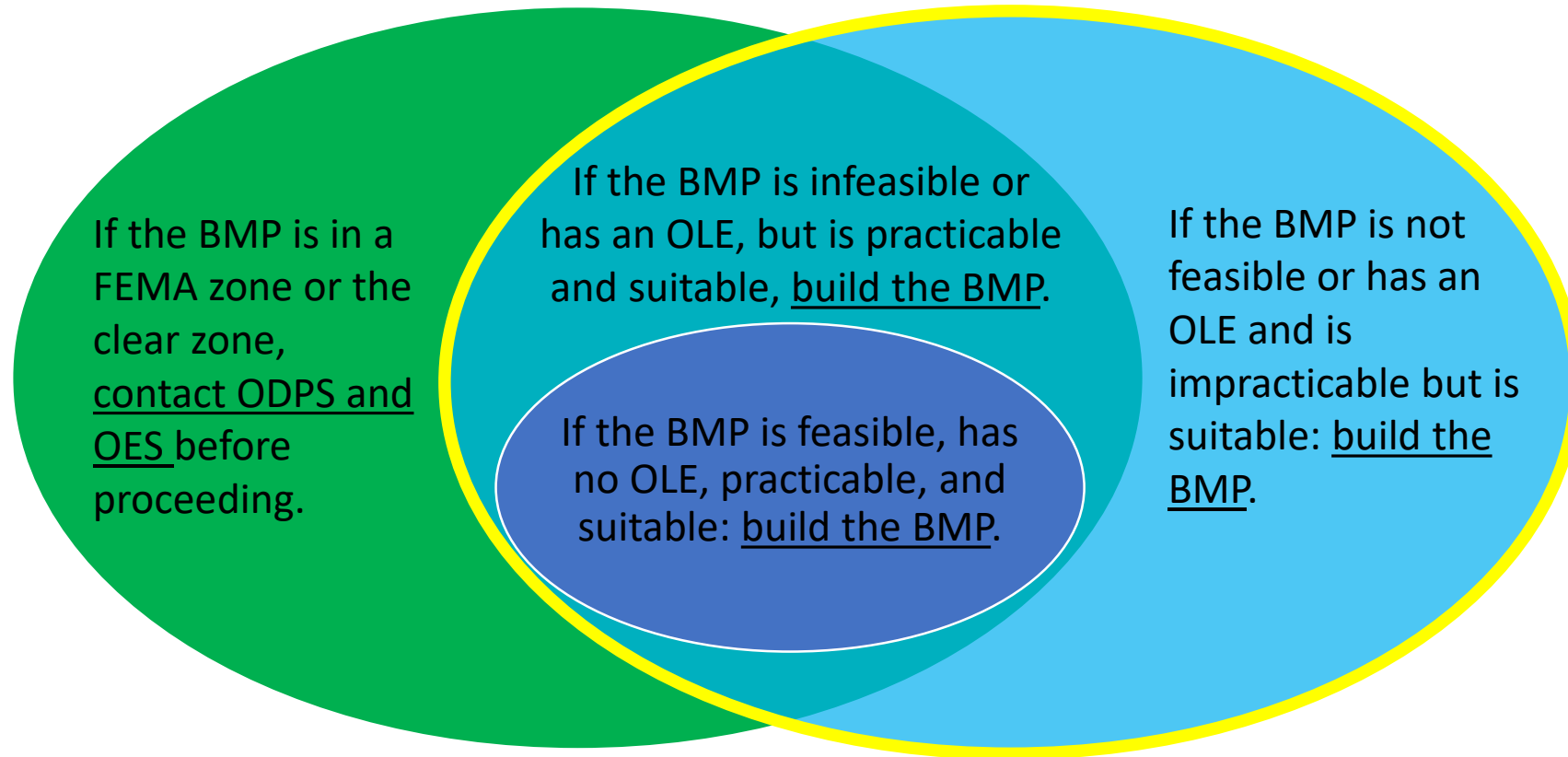
Every BMP in Here is  
Suitable

- If only one analysis purpose applies (e.g. just ecology), use that purpose's criteria to determine if the BMP will be built.
- Note: all the following examples are fictional.

Build the BMP if it falls  
within the yellow circle.

## If MS4, Ecology Stormwater Analysis, and Section 10.2.3 Apply Examples 1-4

Assuming Detention is Warranted



### Legend

Every BMP in Here is  
Feasible & Has No OLE

Every BMP in Here is  
Practicable

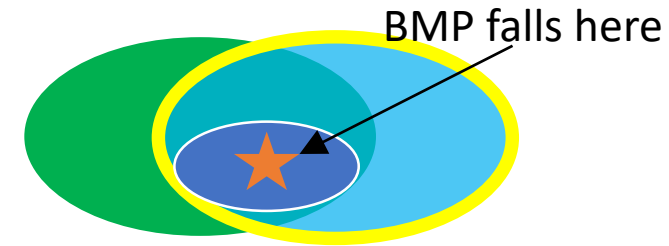
Every BMP in Here is  
Suitable

If the BMP is not suitable and impracticable:  
contact ODPS before proceeding.

## Suitable, Practicable, and Feasible

### Example 1:

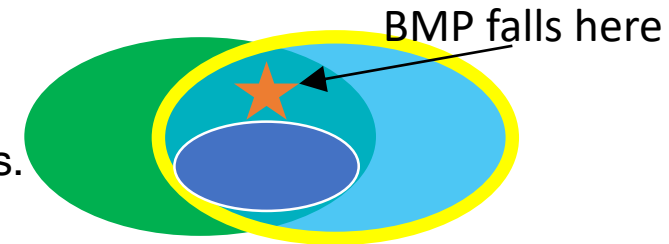
- A major widening project on a state route in Gwinnett County in MS4 areas.
- The project needs to comply with GDOT's MS4 permit.
- Agency coordination with ecologists has indicated that stormwater analysis is needed to remove seasonal restrictions.
- 4.78 acres of net new impervious area are added in a drainage area. The designer recommends that detention is warranted. Otherwise, 25-year peak flows would increase 18% at the downstream point.
- The initial treatment parameters include infiltration of the  $RR_v$  or treatment of  $WQ_v$  for 80% TSS removal.
- The designer looks for incidental treatment but does not find any. However, the designer finds that a wet detention pond is suitable, practicable, and feasible to attenuate peak flows and treat the  $WQ_v$ . Wet detention ponds provide 80% TSS removal. The designer documents the analysis and proposed pond in the MS4 Report.
- ODPS or the MS4 Review Team reviews and, after one round of comment and resubmittal, finds the report acceptable.
- The wet detention pond is then included in each milestone plan submittal. ROW is purchased for this wet detention pond. **The pond is built.** The GDOT maintains the pond.



## Suitable, Practicable, but Infeasible or OLE

### Example 2:

- An interchange reconfiguration project on a state route in Forsyth County in MS4 areas.
- The project needs to comply with GDOT's MS4 permit.
- Agency coordination with ecologists has indicated that stormwater analysis is needed due to protected species.
- 5.08 acres of net new impervious area are added in a drainage area. There is a privately owned downstream pond 450 ft from the outfall which the designer models. They find the private pond does not have capacity to handle the increase in peak flows if attenuation is not provided so the designer recommends detention is warranted.
- The initial treatment parameters include infiltration of the RRV or treatment of  $WQ_v$  for 80% TSS removal.
- The designer finds that there are incidental filter strips in the drainage area which treat 2.02 acres of existing impervious area with 60% TSS removal for the  $WQ_v$ . Additionally, a dry detention basin is suitable and practicable. It can receive 5.08 acres of impervious area. However, the dry detention basin would not be feasible because, including ROW, the BMP would cost 12% of the total cost of the project within the drainage area.
- The designer documents the treatment provided which is equivalent to  $((2.02 \times 0.60) + (5.08 \times 0.6)) / 5.08 = 83\%$  TSS removal. The designer documents the recommended pond in the MS4 PCSR.
- ODPS or the MS4 Review Team reviews and finds the report acceptable.
- The dry detention pond is then included in each milestone plan submittal. ROW is purchased for this dry detention pond. **The pond and filter strips are built.** The GDOT maintains the pond and filter strips.

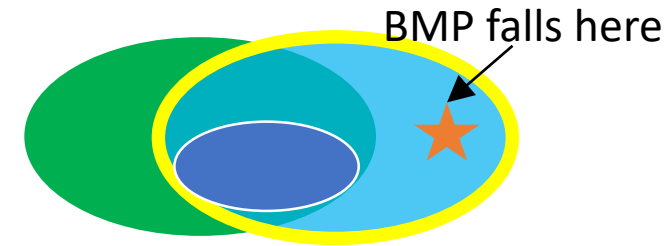




## Suitable, but Impracticable, and Infeasible or OLE

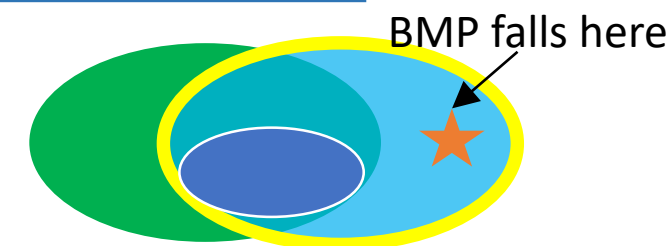
### Example 3:

- A new location project will be a state route in Spalding County in MS4 areas.
- The project needs to comply with GDOT's MS4 permit.
- Agency coordination with ecologists has indicated that stormwater analysis is needed to remove seasonal restrictions.
- 4.10 acres of impervious area are added in a drainage area. There is are several residences 1,000ft downstream beside a ditch which receives flow from the outfall. The designer models the ditch beside the residences in HY-8.
- They find the existing flows for the design year storm stay within the ditch. They find the ditch does not have capacity to handle the increase in peak flows if attenuation is not provided. The flow for the design year storm would flood the residences so the designer recommends detention is warranted.
- The initial treatment parameters include infiltration of the  $RR_v$  or treatment of  $WQ_v$  for 80% TSS removal.



Continued...

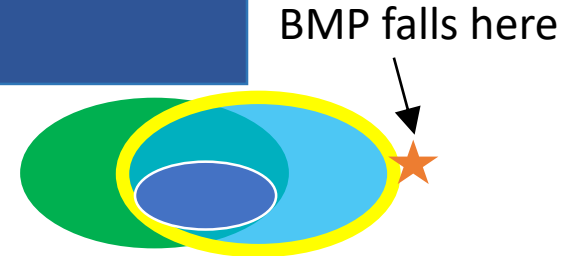
## Suitable, but Impracticable, and Infeasible or OLE



### Example 3 (continued):

- The designer looks for incidental treatment but does not find any. The designer finds a location where a dry detention basin is suitable. It can receive 4.34 acres of impervious area. However, the dry detention basin would not be feasible or practicable because the detention pond would displace a business that would not otherwise be displaced. No additional BMP is feasible or practicable.
- $(4.34 \times 0.60) / 4.10 = 64\%$  TSS removal. The designer documents the recommended pond in the MS4 PCSR.
- ODPS or the MS4 Review Team reviews and finds the report acceptable.
- The ecologists inform the agency that infiltration of the  $RR_v$  or 80% TSS removal was not practicable. They determine if alternate mitigation is needed.
- The dry detention pond is then included in each milestone plan submittal. ROW is purchased for this dry detention pond. **The pond is built.** The GDOT maintains the pond.

## Not Suitable, Impracticable, and Infeasible or OLE

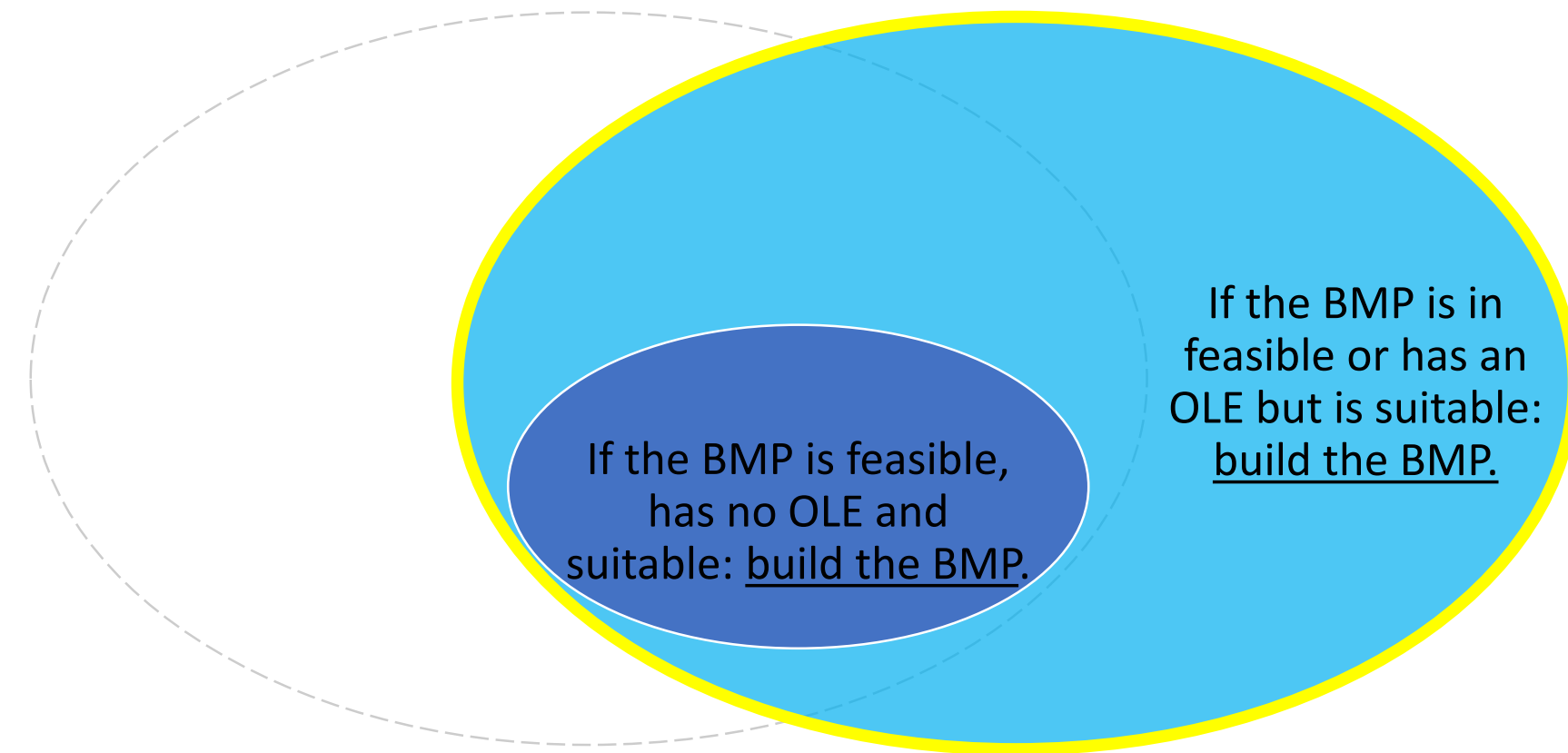


### Example 4

- A major widening project will be on a state route in Henry County in MS4 areas. The project needs to comply with GDOT's MS4 permit.
- Agency coordination with ecologists has indicated that stormwater analysis is needed to remove seasonal restrictions.
- 2.31 acres of impervious area are added in a drainage area. The designer recommends that detention is warranted. Otherwise, 25-year peak flows would increase 10.5% at the downstream point. However, the increased flows would be conveyed harmlessly to the downstream point.
- The initial treatment parameters include infiltration of the  $RR_v$  or treatment of  $WQ_v$  for 80% TSS removal.
- The designer looks for incidental treatment but does not find any. The designer finds the best location for a dry detention basin. It can receive 2.35 acres of impervious area. However, the dry detention basin would not be suitable, feasible, or practicable because the detention pond would displace a school building that would not otherwise be displaced. No additional BMP is feasible or practicable. Therefore, the designer contacts ODPS.
- ODPS waives detention requirements for this outfall. The designer documents in the MS4 PCSR.
- ODPS or the MS4 Review Team reviews the MS4 PCSR and, after two rounds of comment and resubmittal, finds the MS4 PCSR acceptable. **No BMP is built for this outfall.**
- The ecologists inform the agency that treatment was not practicable. They determine if alternate mitigation is needed.

## If MS4 and Section 10.2.3 Apply Examples 5-7

Assuming Detention is Warranted



### Legend

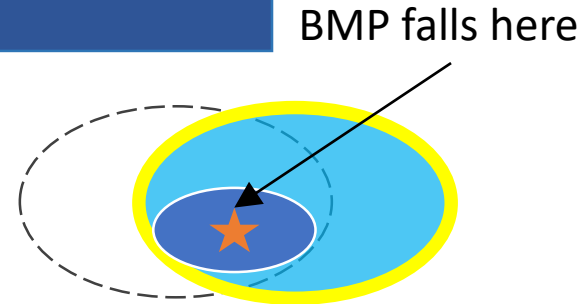
Every BMP in Here is  
Feasible & Has No OLE

Every BMP in Here is  
Suitable

## Suitable and Feasible

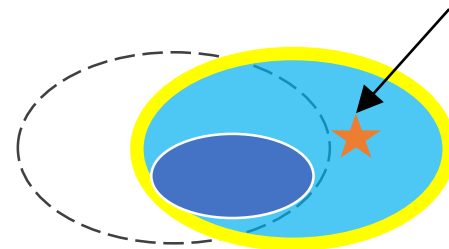
### Example 5:

- Major widening project on a state route in Cobb County in an MS4 area.
- The project needs to comply with GDOT's MS4 permit.
- For a drainage area, the designer calculates that 1.75 acres of net new impervious area will be added by the project. No outfall level exclusions apply to this outfall.
- Detention is recommended to be warranted since there is an offsite pipe system under a parking lot 500ft downstream of the outfall. The designer analyzed the offsite pipe system and found that it cannot handle the increase in peak flows which would result if detention were not provided.
- Between the state route and the parking lot, the designer finds a location where a wet detention pond is feasible and suitable.
- ODPS or the MS4 Review Team reviews the MS4 PCSR and, after one round of comment and resubmittal, finds the report acceptable and agrees that detention is warranted and suitable.
- The wet detention pond is then included in each milestone plan submittal. ROW is purchased for the pond. **The pond is built.** GDOT maintains the pond.



## Suitable but Infeasible or OLE

BMP falls here

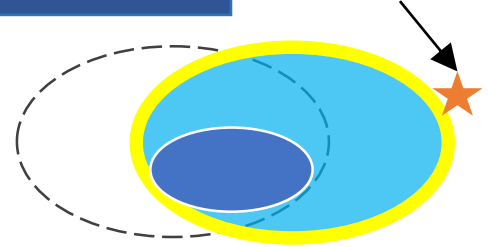


### Example 6:

- Interchange reconfiguration project on a state route in Douglas County in an MS4 area.
- The project needs to comply with GDOT's MS4 permit.
- For a drainage area, the designer calculates that 3.24 acres of net new impervious area will be added by the project. No outfall level exclusions apply to this outfall.
- Detention is recommended to be warranted since there is a privately owned underground detention facility 750ft downstream of the outfall. The designer analyzes the underground facility and finds that it cannot handle the increase in peak flows which would result if detention were not provided.
- Between the state route and underground facility, the designer finds a location where an enhanced dry swale and dry detention pond treatment train is suitable. However, the designer finds the treatment train is infeasible due to cost. The designer documents the suitable detention pond and the infeasible treatment train in MS4 PCSR.
- ODPS or the MS4 Review Team reviews the MS4 PCSR, finds the report acceptable and agrees that detention is warranted and suitable while the treatment train would be infeasible.
- The dry detention pond is then included in each milestone plan submittal. ROW is purchased for the pond. **The pond is built.** GDOT maintains the pond.

## Not Suitable and Infeasible or OLE

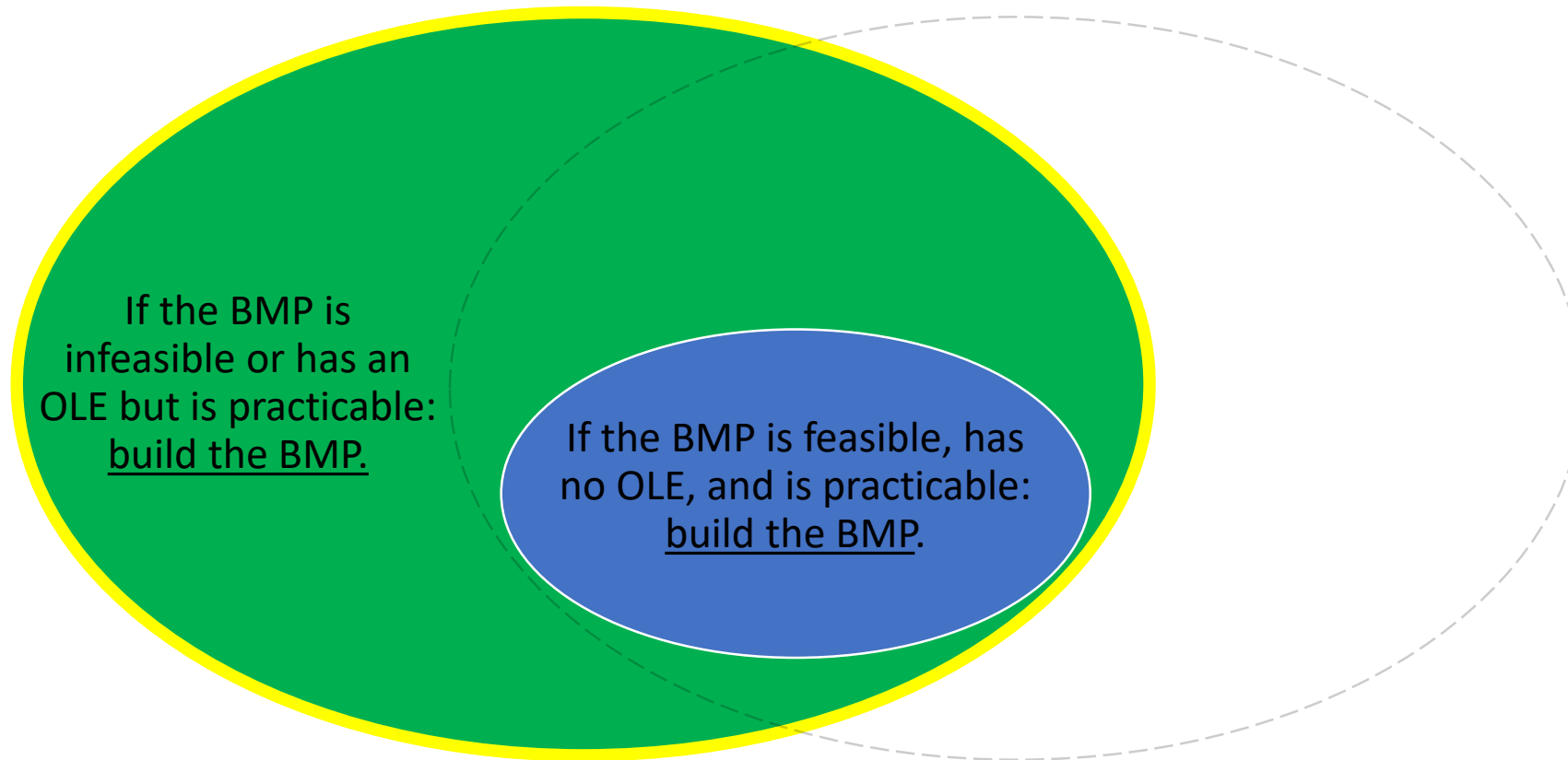
BMP falls here



### Example 7:

- New location project which will be a state route in Chatham County in an MS4 area.
- The project needs to comply with GDOT's MS4 permit.
- For a drainage area, the designer calculates that 0.30 acres of impervious area will be added by the project. The total drainage area is 1.33 acres. No outfall level exclusions apply.
- Detention is recommended to be warranted since there is a state route between the outfall and the downstream point which has an 18" cross drain. The designer's analysis shows that the increase in peak flows if detention were not provided would cause pressurized flow in the 18" crossdrain. However, freeboard requirements would still be met.
- The designer finds that the elevation change between the outfall and the 18" cross drain is insufficient to build a detention facility. In summary, there is a lack of sufficient gravity flow. The designer does not find any other feasible BMP. Therefore, the designer contacts ODPS.
- ODPS waives detention requirements for this outfall. The designer documents in the MS4 PCSR.
- ODPS or the MS4 Review Team reviews the MS4 PCSR and, after two rounds of comment and resubmittal, finds the MS4 PCSR acceptable. **No BMP is built for this outfall.**

## If MS4 and Ecology Stormwater Analysis Applies Examples 8-10



### Legend

Every BMP in Here is  
Feasible & Has No OLE

Every BMP in Here is  
Practicable

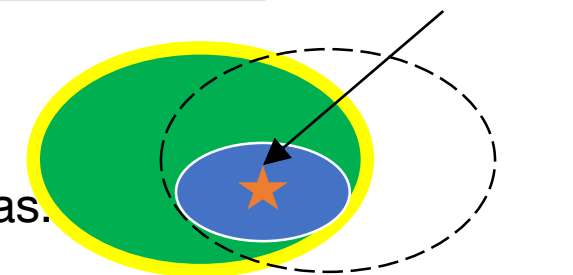
If the BMP is  
impracticable, do not  
build the BMP.



## Feasible and Practicable

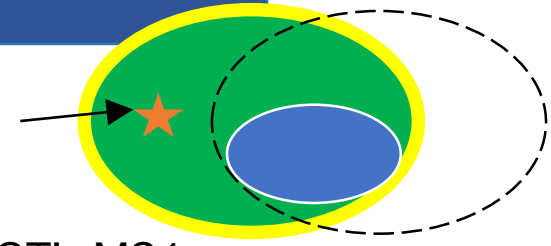
### Example 8:

- A major widening project on a state route in Cherokee County in GDOT's MS4 areas.
- The project needs to comply with GDOT's MS4 permit.
- The project drains to water resources with Cherokee Darters and agency coordination with ecologists has indicated that stormwater analysis is needed due to the Cherokee Darters.
- 0.22 acres of net new impervious area are added in a drainage area. The total drainage area is less than 1 acre, detention is not recommended.
- The initial treatment parameters include infiltration of the  $RR_v$  or treatment of  $WQ_v$  for 80% TSS removal.
- The designer looks for incidental treatment but does not find any. However, the designer finds that a bioslope is feasible and practicable to treat the  $WQ_v$ . Bioslopes provide 85% TSS removal. The designer documents the analysis in the MS4 PCSR.
- ODPS or the MS4 Review Team reviews and, after one round of comment and resubmittal, finds the report acceptable.
- The bioslope is then included in each milestone plan submittal. No ROW is needed for this bioslope. **The bioslope is built.** GDOT maintains the bioslope.



## Infeasible or OLE but Practicable

BMP falls here



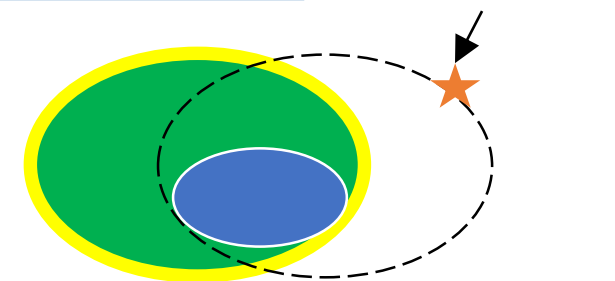
### Example 9:

- A project on a state route converting an intersection to an interchange in Bibb County in GDOT's MS4 areas.
- The project needs to comply with GDOT's MS4 permit.
- Agency coordination with ecologists has indicated that stormwater analysis is needed to remove seasonal restrictions.
- 2.06 acres of net new impervious area are added in a drainage area. The designer completes the downstream analysis and recommends that detention is not warranted.
- The initial treatment parameters include infiltration of the  $RR_v$  or treatment of  $WQ_v$  for 80% TSS removal.
- The designer finds that there are some incidental filter strips in the drainage area which treat 1.99 acres of impervious area with 60% TSS removal for the  $WQ_v$ . The flow concentrates before exiting the ROW. Additional treatment is found to be infeasible because it would displace a business.
- The designer documents the treatment provided which is equivalent to  $(1.99/2.06) \times (0.60) = 58\%$  TSS removal. The designer documents in the MS4 PCSR.
- ODPS or the MS4 Review Team reviews and accepts the report. **The filter strips are built** and maintained by GDOT.

## Infeasible or OLE and Impracticable

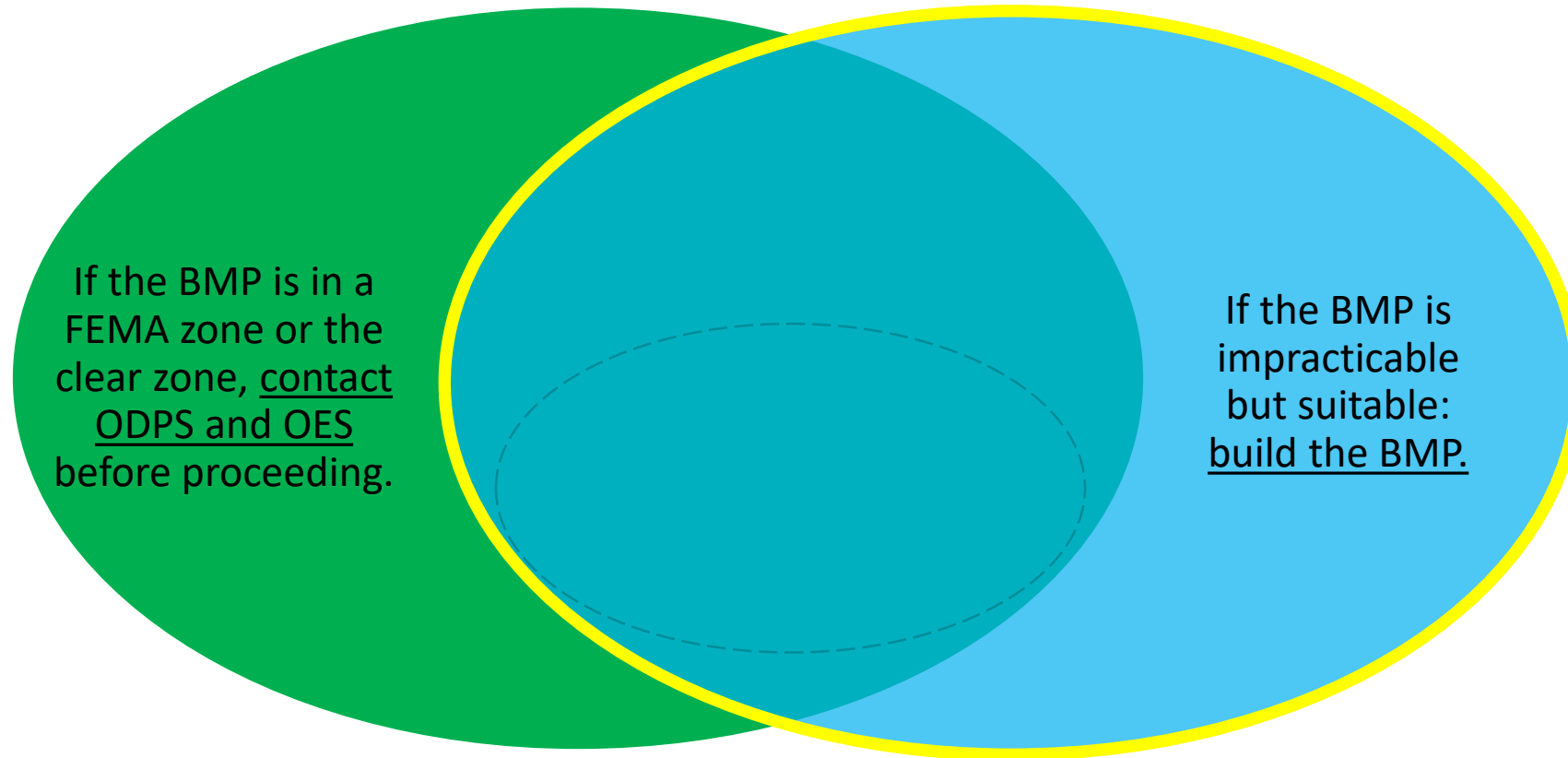
### Example 10:

- A bridge replacement project on a state route over a waterway in Bartow County.
- The project needs to comply with GDOT's MS4 permit.
- The outfall drains to water resources with Etowah Darters and agency coordination with ecologists has indicated that stormwater analysis is needed due to the Etowah Darters.
- 0.67 acres of net new impervious area are added in a drainage area. Since the bridge is over a waterway, detention is not recommended.
- The initial treatment parameters include infiltration of the  $RR_v$  or treatment of  $WQ_v$  for 80% TSS removal.
- The designer looks for incidental treatment but does not find any. The designer looks for a location to propose a BMP but adjacent to the project there is a cemetery with graves close to the road so they are not able to find a location for feasible, practicable treatment. The designer documents in the MS4 PCSR.
- ODPS or the MS4 Review Team reviews and, after a round of comment and resubmittal, finds the report acceptable.
- **No BMP is built for this outfall.** The ecologists inform the agency, and they understand the situation. They determine if alternate mitigation is needed.



## If Ecology Stormwater Analysis and Section 10.2.3 Apply Examples 11-14

Assuming Detention is Warranted



### Legend

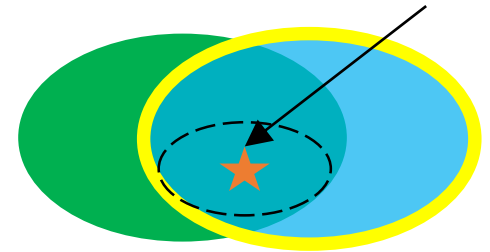
Every BMP in Here is  
Practicable

Every BMP in Here is  
Suitable

If the BMP is not suitable and impracticable,  
contact ODPS before proceeding.

## Suitable and Practicable

BMP falls here



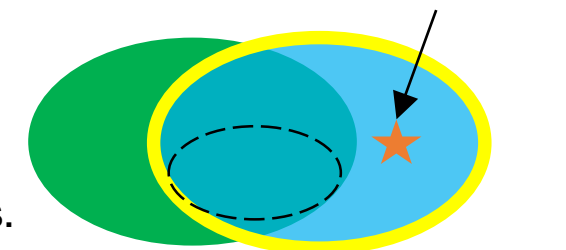
### Example 11:

- A major widening project on a local road in Paulding County outside MS4 areas.
- The project drains to water resources with protected species and agency coordination with ecologists has indicated that stormwater analysis is needed due to the species.
- 4.07 acres of net new impervious area are added in a drainage area. The designer recommends that detention is warranted. Otherwise, 25-year peak flows would increase 23% at the downstream point.
- The initial treatment parameters include infiltration of the  $RR_v$  or treatment of  $WQ_v$  for 80% TSS removal.
- The designer looks for incidental treatment but does not find any. However, the designer finds that a wet detention pond is suitable and practicable to attenuate peak flows and treat the  $WQ_v$ . Wet detention ponds provide 80% TSS removal. The designer documents the analysis in a combined EPCSR-Detention Report.
- ODPS reviews and, after one round of comment and resubmittal, finds the report acceptable. The PM or the designer contacts the local government, and they agree to own and operate the pond.
- The wet detention pond is then included in each milestone plan submittal. ROW is purchased for this wet detention pond. **The pond is built.** The local government maintains the pond.

## Suitable but Impracticable

### Example 12:

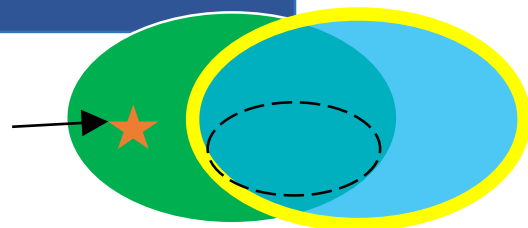
- An interchange reconfiguration project on a state route in Laurens County outside MS4 areas.
- Agency coordination with ecologists has indicated that stormwater analysis is needed to remove seasonal restrictions.
- 2.81 acres of net new impervious area are added in a drainage area. The designer recommends that detention is warranted since a property downstream has a history of flooding and analysis indicates flooding would be increased unless attenuation is provided.
- The initial treatment parameters include infiltration of the  $RR_v$  or treatment of  $WQ_v$  for 80% TSS removal.
- The designer does not find any incidental treatment. The designer finds that a dry detention pond is suitable to attenuate peak flows. Dry detention ponds provide 60% TSS removal. Additional treatment is impracticable since a treatment train or a wet pond would increase the footprint, impacting a wetland which would not otherwise be impacted. The designer documents the proposed dry detention pond in a combined EPCSR-Detention Report.
- ODPS reviews and finds the report acceptable.
- The dry detention pond is then included in each milestone plan submittal. ROW is purchased for this dry detention pond. **The pond is built.** GDOT maintains the pond.



## Not Suitable but Practicable

### Example 13:

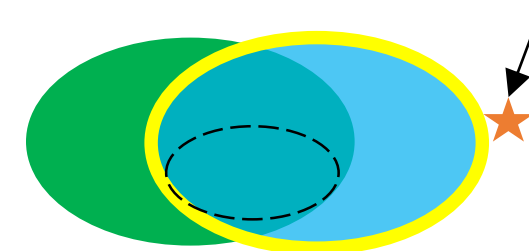
BMP falls here



- A project adding express lanes on a state route in Effingham and Bryan Counties outside MS4 areas.
- Agency coordination with ecologists has indicated that stormwater analysis is needed due to protected species.
- 0.81 acres of net new impervious area are added in a drainage area. The designer recommends that detention is warranted. Otherwise, 25-year peak flows would increase 11% at the downstream point.
- The initial treatment parameters include infiltration of the  $RR_v$  or treatment of  $WQ_v$  for 80% TSS removal.
- The designer finds there is sufficient OGFC coverage in the drainage area to treat the  $WQ_v$ . The designer finds that detention BMPs are not suitable due to insufficient gravity flow. The designer contacts ODPS and ODPS waives the detention requirement. The designer documents the OGFC and unsuitable detention in a combined EPCSR-Detention Report.
- ODPS reviews and finds the report acceptable.
- The OGFC is included in each milestone plan submittal. **The OGFC is installed.** GDOT maintains the OGFC.

## Not Suitable and Impracticable

BMP falls here



### Example 14:

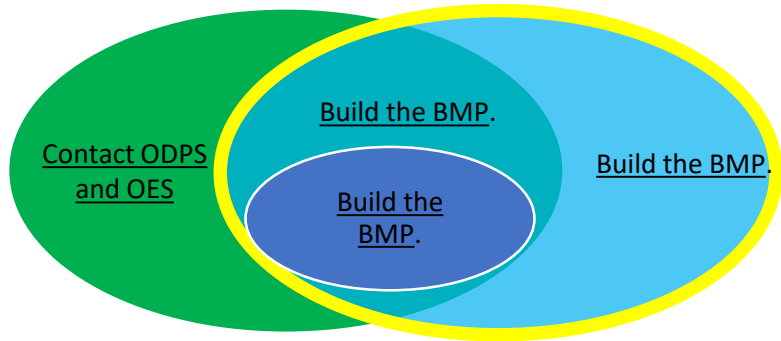
- A major widening project on a state route in Union County outside MS4 areas.
- Agency coordination with ecologists has indicated that stormwater analysis is needed to remove seasonal restrictions.
- 1.55 acres of net new impervious area are added in a drainage area. The designer recommends that detention is warranted since a 15" driveway pipe along the state route would have insufficient capacity without attenuation. The unattenuated flows would cause overtopping on the roadway.
- The initial treatment parameters include infiltration of the  $RR_v$  or treatment of  $WQ_v$  for 80% TSS removal.
- The designer does not find any incidental treatment. The designer finds that all BMPs are not suitable and impracticable due to shallow bedrock. The designer contacts ODPS. ODPS and the designer meet with the Office of Program Delivery. The Office of Program Delivery determines that sufficient time and funding is available to extend the project limits slightly to upsize the 15" pipe. The designer documents in a combined EPCSR-Detention Report.
- ODPS reviews and finds the report acceptable. The ecologists inform the agency, and they understand the situation. They determine if alternate mitigation is needed.
- The upsized pipe is included in the plans. The pipe is upsized during construction. **No BMP is installed for this outfall.**



## How to Determine if the BMP Will Be Built

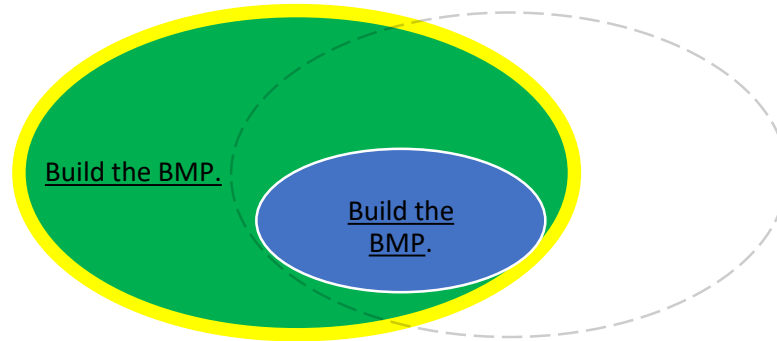
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#### MS4, Ecology, and Detention Slides 46-51



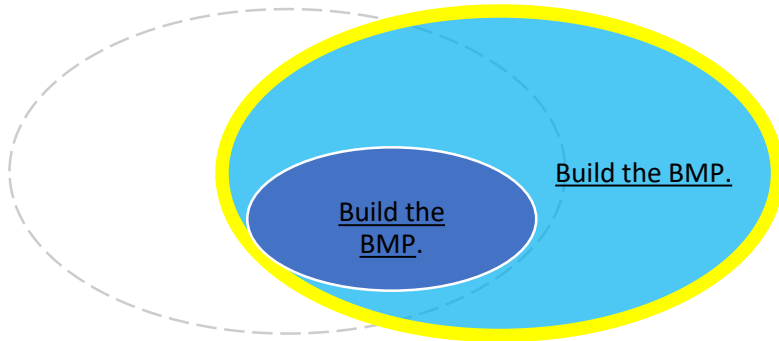
If the BMP is not suitable and impracticable: contact ODPS.

#### MS4 and Ecology Slides 56-59



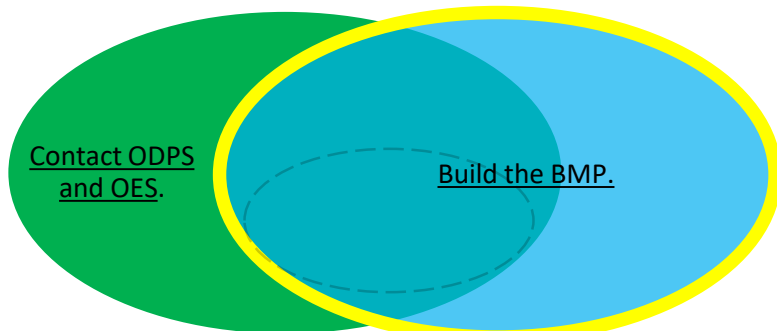
If the BMP is impracticable, do not build the BMP.

#### MS4 and Detention Slides 52-55



If the BMP is not suitable: contact ODPS.

#### Ecology and Detention Slide 60-64



If the BMP is not suitable and impracticable, contact ODPS.

#### Legend

Every BMP in Here is  
Feasible & Has No OLE

Every BMP in Here is  
Practicable

Every BMP in Here is  
Suitable

- If only one analysis purpose applies (e.g. just ecology), use that purpose's criteria to determine if the BMP will be built.
- Note: all the following examples are fictional.

Build the BMP if it falls  
within the yellow circle.

## How to Put Post-Construction BMPs in Plans

For a structural BMP, include information in the following sections:

- 1 – On the cover page include a note that says “This project contains post construction BMPs.”
- 2- Include the 38 series in the index.
- 6- Include the 169 pay item in the quantities. (Do not include the 169 maintenance pay items).
- 13- Show the BMP in the 13 series. Label the BMP and provide stations for linear BMPs. Show a maintenance access drive, if applicable. Show fencing with a gate, if applicable.
- 17- Include the driveway profile if there is a maintenance access drive.
- 18- Include the landscaping plan, if applicable.
- 19- Include the BMP in the staging plans in the applicable stage(s).
- 21- Include the BMP in the drainage area map.



Continued...

## How to Put Post-Construction BMPs in Plans

- 22- Include any pipes going to the BMP in the 22 series drainage profiles. It is not necessary to include the outlet structure and outlet pipe in the 22 series if that profile is in the 38 series.
- 23- Include the BMP in the cross sections.
- 24- Include the BMP in the utility plans.
- 26- For a bioslope, a bioretention basin, an enhanced dry swale, an enhanced wet swale, a sand filter, or a stormwater wetland include signs identifying the location of the BMP. Be sure the signs are not located in the BMP itself.
- 38- Include the BMP in the 38 series. See next slides for more info.
- 53- Include the BMP in the erosion control drainage area map.
- 54- Include the BMP in the BMP location details in the applicable stage(s).
- 60- Include the BMP in the ROW plans.

## How to Put Post-Construction BMPs in Plans

- 38- Include the BMP in the 38 series. Show all information described in the published Combined Special Grading Sheets and PPG. Here are some highlights, see the PPG and Combined Special Grading Sheets for additional instructions.

Show a special grading plan “overhead view”

Trim the ECON file with the FCON file. The ECON file should be screened back and dashed. Show contours for the BMP trimmed to the FCON and ECON file. Label contours at least every 5ft in elevation change.

Label the elevation and width of the top of the berm, if applicable.

Label the elevation and width of the emergency spillway, if applicable.

Include at least one spot elevation on the bottom of the BMP, if applicable.

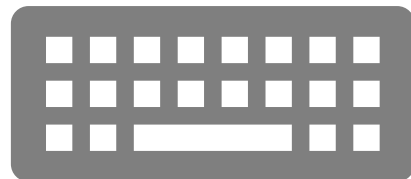
Label side slope ratio (3:1, 4:1, etc.)

Show the maintenance access drive, if applicable.

Show fencing and a gate, if applicable.

Show all components described in chapter 10 of the Drainage Manual for the specific BMP. Examples could include:

Riprap forebay, outlet structure, outlet pipe, headwall, riprap, low flow swale, underdrain layout, bypass structure, level spreader, aquatic bench, and/or safety bench



## How to Put Post-Construction BMPs in Plans

- 38- (continued)

Fill out the applicable design data table(s) and include the blank as-built table(s).

If applicable, include cross sections in the 38 series as shown in the example published Combined Special Grading Sheets.

Check that the BMP components shown in the plans meet the Drainage Manual requirements and match the published Special Construction Details.

For example: check side slopes, berm heights, outlet structure component elevations.

Check that the BMP components shown in the plans match the accepted report.

If any dimensions or elevations have changed since the accepted report, but the BMP type has stayed the same, notify ODPS and inform ODPS if the BMP functions comparably to the design in the accepted report.

Include applicable details in the plan set.

## Plan Presentation Tips

- Follow the PPG.
- Existing contours should be grayed back and dashed.
- If text is overlapping, move labels to eliminate overlapping.
- Print to pdf with sufficient time to observe and edit your own work before submitting.



## Common Mistakes for Showing BMPs in Plans

- Mistake 1: Inconsistency between plan sheets.
- Mistake 2: Inconsistency between report and plan sheet.
- Mistake 3: Missing information needed for construction.
- Mistake 4: Plans do not comply with BMP component descriptions in the Drainage Manual.
- Mistake 5: Plan presentation needs improvement.
- Mistake 6: General constructability / resilience concerns.
- Mistake 7: Modifying the details without notifying ODPS. If you think the BMP needs a project-specific detail modification, notify ODPS.
- Mistake 8: Specifying a sole source component. If modifying a detail, be sure not to specify a sole source component.



## Special Provision 169

- For projects that have non-incidental BMPs that will be built, include SP 169 with each milestone plan review and include it in the construction contract.
- Special Provision 169 is for post-construction BMPs.
- Email [envbmp@dot.ga.gov](mailto:envbmp@dot.ga.gov) or [stormreport@dot.ga.gov](mailto:stormreport@dot.ga.gov) for the most recent version of Special Provision 169.
- For projects that have non-incidental BMPs that will be build, include 169 pay items in the construction contract.  
Do not include post-construction BMP maintenance pay items.



## Contacts

- **Project Ecologist**
- **Agency Representatives**
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## Other Training

- GDOT has published Advanced Design Workshops (ADWs) on ROADS and through ELMS.
- ADWs are MS4 but may also be helpful for learning general stormwater concepts.
- ADW 1, 3, 5, and 6 might be particularly useful for those new to stormwater.
- Please note that ADW 2 is being updated. Do not reference ADW 2 for GDOT's detention policy. See GDOT's Drainage Manual instead.

- [ADW1 Stormwater Basics](#)  
ADW10 Filter Strip and Bioslope Design
- ✗ [ADW2 Downstream Analysis](#)
- [ADW3 Exclusions and Infeasibilities](#)  
ADW4 Wet Detention Pond Design
- [ADW5 Post Construction Stormwater Report](#)
- [ADW6 Basin Delineation and BMP Selection](#)  
ADW7 Enhanced Dry Swale Design  
ADW8 BIORETENTION BASIN DESIGN  
ADW9 Following PDP PPG for MS4

# Wrap-up and Key Takeaways

Brad McManus, PE  
*State Roadway Hydraulics Engineer*  
[bmcmanus@dot.ga.gov](mailto:bmcmanus@dot.ga.gov)

# Takeaways

- **Ecology Post-Construction Stormwater Report**
  - The EPCSR facilitates coordination among offices and agencies.
  - The EPCSR enables practitioners to clearly and uniformly document resources and treatment targets.
  - The EPCSR establishes consistent expectations for the analysis process.
  - Know where to find information on Ecology Post Construction Stormwater Reports.
  - Know when to prepare the report and know who prepares each portion of the report.



ANY  
QUESTIONS  
?



**EnvBMP@dot.ga.gov**

# Recent Training Webpage

Link to recent training on-line

<http://www.dot.ga.gov/PS/Training/RecentTraining>

## Recent Training Sessions

### TRAINING MATERIALS

#### Design Environmental Training Session - Watch Now

June 25, 2021, 10:00 AM

Georgia DOT recently held a design environmental discussion covering the following topics on Section 20 Plans: A Mindset of Collaboration, and Construction Envelope Permitting.

[Watch Video](#)



#### GDOT Conducts Virtual Training for Understanding Environmental Baseline Schedules

March 31, 2021, 4:30 PM

Georgia DOT recently held a virtual training class covering the topic "Understanding Environmental Baseline Schedules."

#### Training Materials

- [Training Welcome & Overview \(Presentation\)](#)

[Watch Video](#)



# Recently Posted!

**Wednesday, June 23**

## **Section 20 Plans: A Mindset of Collaboration**

Donn Digamon, PE, State Bridge Engineer

Sam Woods, PE, Assistant State Roadway Design Engineer

Chris Goodson, Ecology Section Manager

- *The connectivity of constructability and permits*
- *Project schedules and timeliness of Constructability and Final Plans Development phases*
- *How each team member contributes to the Section 20 process and plans*

## **Construction Envelope Permitting**

Dave Hedeem, Ecology Section Manager

- *The concept of Construction Envelope Permitting (CEP)*
- *The application and limitations of the CEP concept*
- *How design changes and post-let changes may be addressed by CEP*
- *The requirements for implementation of CEP on GDOT projects*

# Soon to Be Posted!

**Tuesday, July 20**

## **Joint Coordination Procedures: Streamlining Consultation with FHWA and US Fish & Wildlife Service**

Chris Goodson, Ecology Section Manager

- *How and when GDOT coordinated with federal and state agencies*
- *Opportunities for environmental process streamlining and schedule recovery*
- *Current and future incentives for prioritizing ecological design*
- *Which design changes do and do not require reinitiating agency consultations*

## **Ecology Post-Construction Stormwater Report**

Dave Hedeon, Ecology Section Manager

Brad McManus, PE, State Roadway Hydraulics Engineer

Sarah Jones, EIT, Water Resources Engineer

- *The purpose, applicability and contents of the Ecology Post-Construction Stormwater Report template*
- *Common water quality terminology*
- *Reasons to build a post-construction BMP*
- *Reasons to not build a post-construction BMP*



# Coming Soon!

**Wednesday, July 28**

## **Perennial Stream Culvert Requirements: Design and Delivery Strategies**

Sam Woods, PE, Assistant State Roadway Design Engineer

David Hedeem, Ecology Section Manager

- *Following attendance at this session, project managers, designers and environmental staff will understand:*
- *USACE's Regional Conditions on perennial stream culverts*
- *The concept of bankfull width: definition, methodology, importance/relevance to design*
- *How to design a culvert that complies with the Regional Conditions*
- *How to address perennial stream culvert requirements, including diagrams, in Section 404 permit applications*
- *Project delivery implications for projects with perennial stream culverts*

# Follow-up and Thank you

- Anonymous attendees will not receive notice when
  - ✓ Questions and Answers compiled and posted
  - ✓ Session recording is posted
- Request PDH certificate
- Many thanks to Brian Stocks, producer